

President's Message

This is the first issue of the Mycophile under our new Editor, Dianna Smith. We are indeed fortunate that she has volunteered to take on this important NAMA position, and I know all members join me in welcoming her to her new post. Dianna is an historian of science and technology and an aspiring mushroom photographer. She is the current President of the Connecticut-Westchester Mycological Association (COMA) and she has served as Chair of the North East Mycological Federation (NEMF) Foray. In addition, she founded with Gary Lincoff COMA's Mushroom University late winter mushroom education workshops. She publishes lists and photographs of the club's weekly finds at www.pbase.com/comafungi and has an education site called www.fungikingdom.net. Her photographs have been included in Michael Kuo's *100 Edible Mushrooms*, in Gary Lincoff's *The Complete Mushroom Hunter* and other books as well as the *Audubon Field Guide* smart device application.

Allein Stanley, after many years of dedicated service as Chair of the Foray Committee, has decided to retire from that position. She has played an important role in many of the wonderful forays NAMA members have enjoyed. I asked Noah Siegel to take over the Chairmanship of the Foray Committee and he agreed. Noah has been a member of NAMA since 2000. He has done extensive traveling the past few years, giving popular lectures at events hosted by over 25 NAMA affiliated clubs. This has allowed him to establish many close connections with thriving mushroom communities throughout North America. He has served as the President of Monadnock Mushroomers Unlimited (MMU) and has been on the Board of Trustees of NEMF for the past four years. This year he begins his duties as the NAMA Region 1 Trustee, and in addition will be handling our 2012 national foray.

In another management change, Maxine Stone, David Rust and Connie Duman have been appointed to serve as the Trustee members of the Executive Committee for 2012. All three are hardworking and experienced members of NAMA and each is well qualified to assist in managing the organization.

Recently NAMA entered into an arrangement with Mushroom Observer whereby photographs and related materials on specimens compiled by the Voucher Committee at the 2011 NAMA Clarion Pennsylvania Foray will be placed on Mushroom Observer (http://mushroomobserver.org/species_list/show_species_list/248) - a collaborative amateur mycology website started by Nathan Wilson. Its purpose is to "record observations about mushrooms and help people identify mushrooms they are unfamiliar with, and expand the community around the scientific exploration of mushrooms". While the emphasis is on the large fleshy fungi, other fungi, such as lichens, rust and molds as well as fungus-like organisms -- such as slime-molds -- are welcome.

David Rust, Pat Leacock and Martin Livezey have generously offered to help place the Clarion material on the Mushroom Observer website. This will be a time consuming effort, as the voucher information relating to each mushroom species must be entered separately. The plan at this time is to eventually place all the NAMA voucher material now housed at the Field Museum in Chicago on the Mushroom Observer website.

Thanks to the creative work of Patrice Benson we now have a new NAMA brochure. It is a colorful one with several attractive photographs of foragers and their finds. It has sections describing NAMA's history, purpose, and membership benefits, and a membership application form. I believe this highly informative document will be most helpful in attracting new members. If you wish to obtain a few brochures for distribution please contact Executive Secretary Rebecca Rader.

Lastly, Ann Bornstein, our Membership Secretary, tells me that PayPal is up and running, so you can now pay your membership dues by using that system. I know this will be a big help to her as she has many demanding responsibilities in addition to seeing that membership dues are kept current.

Hopefully, with fewer droughts this year, we can more often experience the joy of filling baskets to overflowing with our fungal discoveries. And remember while on your mushroom gathering adventures, to take time to really enjoy the great outdoors and the company of good friends and fellow mushroom enthusiasts.

Bob Fulgency

NAMA 2012 FORAY

Discover for yourself California's best kept secret – when most of the country is frozen over, California's mushroom season is in full swing! Join us in the beautiful hills of Scotts Valley for the North American Mycological Association's 52nd annual foray from December 13-16, 2012.

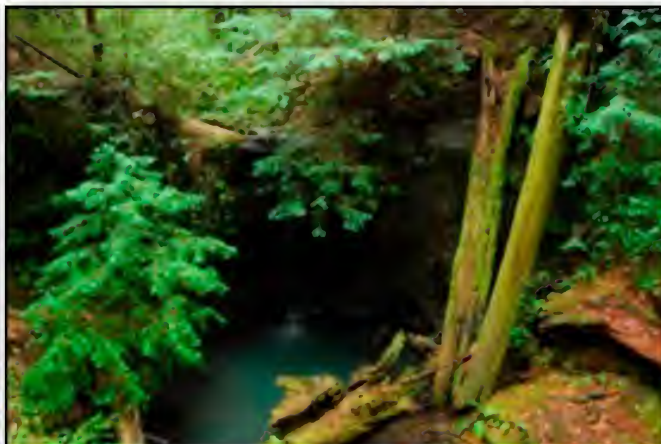
Our Chief Mycologist will be Dr. Else C. Vellinga, an accomplished fungal taxonomist and renowned *Lepiota* expert from UC Berkeley. She has been published extensively, including co-authorship of *Flora Agaricina Neerlandica*, as well as numerous articles in *Mycologia* and *Mycotaxon*. Else is not



only active in academia, she has an impressive field sense and engages with amateur clubs in her effort to inform the public about this 'forgotten kingdom'. It is our distinct pleasure and honor to have Dr. Vellinga as the taxonomic advisor for the 2012 foray. Special Guest Mycologist David Arora, author of the nationally renowned books, *Mushrooms Demystified* and *All That the Rain Promises and More*, will also be joining us in celebration of NAMA returning to CA.

Mushroom hunting in the Santa Cruz area is sure to turn up a great diversity of mushrooms, from the beautiful to the delectable. Some of these may include the striking blue and purple *Entoloma*, an array of brilliant red, yellow, and green *Hygrocybe*, the handsome *Boletus edulis* var. *grandedulis* (better known as Porcini) and California's often massive, endemic Chanterelle, *C. californicus*!

For the 2012 NAMA foray we have arranged very special permission to collect in Henry Cowell, Wilder Ranch, and Nisene Marks State Parks, which include every major habitat type found on the central coast, including



hardwood groves, Douglas-fir forests, the critically endangered and globally unique pine-clad sandhills, and last but certainly not least, the dark, damp, awe-inspiring Coast Redwoods.

For those of you who will be accompanying your mushroom-obsessed significant other, this is the perfect opportunity for a California vacation! You will not be far from great sightseeing and shopping – our foray will be located at Mission Springs Conference Center

in the woods on 300 acres less than 10 miles from downtown Santa Cruz, a beautiful town and one-of-a kind shopping destination. A day trip to San Francisco for sight-seeing or shopping is only an hour and a half from our site, with numerous picturesque stops along the way. We hope to see you at NAMA 2012 in California!

NAMA Foray 2012 Planning Committee

Editor: The registration form for the NAMA foray will be on line at www.namyc.org in March and in the next issue of the MYCOPHILE. Photos by Noah Siegel

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NAMA REGIONAL FORAY - WILDACRES: Fifteen Years! by Allein Stanley

2012 marks the fifteenth year we have been fortunate enough to hold our Eastern Regional Foray at Wildacres. Dates this year are September 20 -23. **Registration is limited to 40 NAMA members at \$225 per person, double occupancy.**

Glenda O'Neal continues to serve as registrar. Contact her at glendakoneal@yahoo.com or at 423-246-1882.

During the course of these forays, we have suffered some years with skimpy collecting and quite a few years when we couldn't handle all of the specimens. Considering that we 'plow much of the same ground' and at approximately the same time of year, we think it is significant that we have continued to collect about twenty percent of the fungi each year that are not in our records as having been found before. Perhaps this is a small indication of the need across the continent for consistent study.

Dr. Orson Miller kicked off our first foray as Chief Mycologist and served once again three years later. Those that have wonderfully filled that responsibility in ensuing years include Dennis Desjardin, Juan Mata, Brandon Matheny, Andy Methven, and Greg Mueller. Walt Sundberg has frequently acted as Recorder. Coleman McCleneghan has been our staunch supporter all these years and will serve this year as Chief Mycologist.

Also included are some of those who have been seen either with their heads hovering over a microscope or the identifying tables: Rod Tulloss, Rich Baird, Pat Leacock, Jay Justice, Glenn Boyd, Ken Olson, Owen McConnell, Dave Lewis, Donna Mitchell, Bill Roody, Ken Crouse, Todd Elliott, Noah Siegel, and Debbie Viess.

Bart Buyck's newly described species, *Russula parvovirescens*, adorns the tee-shirt Becky Rader designed the year he joined us. Becky's artistic depictions of other on-hand mushrooms, indelibly painted with boiled-down *Coprinus comatus*, have proven to be a treasure.

The ambience of Wildacres is unsurpassed. Take a look at the website www.wildacres.org. Early registration is advised.

OTHER FORAYS & ANNOUNCEMENTS

August 2-5 NEMF 36th Annual Sam Ristich Foray at East Stroudsburg, PA. www.nemf2012.org/Registration.htm for further information and registration form.

August 16-19, 2012 The Telluride Mushroom Festival. www.shroomfest.com/

September 13-16 COMA Foray in Hebron, CT with Chief Mycologist Gary Lincoff, Dr. Roz Lowen, John Plischke III and Bill Yule. www.comafungi.org

Sept. 27 – Oct.6, 2012 The Newfoundland Mushroom Adventure (Canada) 9 days/nights, strong mycology focus with sightseeing, history, culture in this huge, forested, fungi-rich island in the Atlantic. Premium lodgings, food, foray transport. All-inclusive Cost Share Fee: \$2,780 p/p dbl. occ. Organized by NAMA affiliate MycoAficionados of Mexico and Mexican Mushroom Tours. For details, contact Gundi Jeffrey and Erik Purre by email at mexmush@yahoo.com or go to www.mexmush.com.

MYCOLOGY WORKSHOPS AT EAGLE HILL 2012. For information go to <http://www.eaglehill.us/>

The Eagle Hill Foundation at the Humboldt Institute, located on the Maine coast between Acadia National Park and Petit Manan National Wildlife Refuge, is offering three mycology workshops for 2012.

Mushroom Identification for New Mycophiles: Foraging for Edible and Medicinal Mushrooms

Jul 29 - Aug 4. Greg A. Marley and Michaeline Mulvey

Natural History of Fungi and Slime Molds

Aug 5 - 11. Steven L. Stephenson

Coastal Maine Mushrooms and Microscopes Foray

Aug 19 - 25. Rosalind Lowen and Dianna Smith

NAMA's Southwestern Regional Foray!

Labor Day in the Southwest

by Allein Stanley

NAMA maintains a commitment to a regional foray in the Southwest in spite of its necessary postponement in 2011 due to the devastating fires that swept Arizona. Fortunately, we can still gather at the Research Station of the American Museum of Natural History at Portal, AZ over Labor Day Weekend. Dr. Jack States, recognized as an authority on southwestern fungi, will serve as chief mycologist. The Station has hosted much mycological research in the past so Dr. States may well be joined by other mycologists eager to return to this site.

The Station is located within the Chiricahua Mountains, part of the two million acre Coronado National Forest. The area is considered to be the most biologically diverse in the entire United States because biomes range from desert to high elevations. It is also well known to serious birders.

The Station is fully equipped for research and consists of cabins, laboratories, classrooms, a library, herbarium and a central dining room and lodge. There is also a swimming pool for end of the day relaxation. Rains are customary at the end of summer, so this should be the very best time to find mushrooms and other fungi.

Participants in the NAMA Southwestern Regional Foray should arrive for dinner on August 31st and depart after breakfast on Sept. 3rd. Registration of \$260 per person covers all meals, room and board and use of all facilities. Registration is limited to 40 NAMA members.

The Station is approximately a three-hour drive from either Tucson, AZ or El Paso, TX. The registration form can be found on the next page. Additional information about NAMA events can be found at <http://www.namyco.org/events/index.html>.

It is time to pay your dues for 2012 if you have not already done so.

You can pay online through your *PayPal* account at <http://www.namyco.org/join/index.html>

Or send your *check* to Ann Bornstein; 61 Devon Ct; Watsonville CA 95076

The dues are:

\$32 for members of affiliated clubs (please state your club)

\$35 for other North American members (individual or family)

\$35 for foreign members getting email delivery (non North America)

\$45 for foreign members getting regular delivery (non North America)

\$15 for full time students (state your school)

\$60 or more for a sustaining membership

\$500 for a lifetime membership

Contribute to NAMA

NAMA is a 501(c)(3) charitable organization.

Contributions to support the educational activities of NAMA are always welcome and are deductible as allowed by law. Gifts of any amount may be made for special occasions, such as birthdays and anniversaries, and for memorials.

Special categories include:

Friend of NAMA

\$500 - \$999

Benefactor

\$1,000 - \$4,999

Patron

\$5,000 and up

Send contributions to:

Herb Pohl, NAMA Treasurer

5 Oak Grove Rd

Flemington NJ 08822-5903

NAMA has launched a new discussion group, just for members. If you're not a part of the conversation, just go to: http://tech.groups.yahoo.com/group/na_mycological_association/, and click on "Join This Group!". Ask questions about mushrooms and get the latest news about events and activities. NAMA also hosts a discussion group for mushroom cultivation: http://tech.groups.yahoo.com/group/NAMA_mushroom_cultivation/, established in 2004, and moderated by Cultivation Committee Chair Ron Spinosa.

SOUTHWEST REGIONAL FORAY

August 31 – September 3, 2012
Southwestern Research Station
Portal, Arizona

To register, complete this form and mail with a check for \$260 by August 1, 2012, payable to NAMA, to:

Ann Bornstein
61 Devon Ct
Watsonville CA 95076

Info: annstitcher@charter.net or call (831) 786-0782

All rooming is dormitory style – 2 or 3 in a room with central baths. There are no private rooms. Participants at this foray will be limited to 40 persons.

1. Name _____ Male____ Female____

2. Name _____ Male____ Female____

3. Name _____ Male____ Female____

1. Address _____

2. Address _____

3. Address _____

1. Phone _____ e-mail _____

2. Phone _____ e-mail _____

3. Phone _____ e-mail _____

We hope to be able to accommodate any special dietary needs.

Dietary requests _____

The cost of the foray covers 3 nights lodging and 8 meals beginning with an evening meal on Friday, August 31 and ending with breakfast on Monday, September 3.

Liability waiver: By signing below, I release the North American Mycological Association, its officers and members from any and all liability and loss arising from any accident, injury or illness which may result from activities of the NAMA regional foray at the Southwest Research Station.

Signature #1. _____ Date _____

Signature #2. _____ Date _____

Signature #3. _____ Date _____

NAMA's New Marketing Committee Reaches Out

In 2009, a core group of NAMA trustees at the annual foray in Lafayette, Louisiana, brainstormed how to reach new members. Hundreds of ideas flowed. Several of the group's proposals were acted on. In 2010, a Marketing Committee was created to capitalize on these proposals, expand membership, and bring new communication tools to NAMA.

NAMA formed a speaker's bureau as a resource for affiliated club programs, created an online discussion group, and added online dues payment through PayPal. NAMA has converted its publications, *McIlvainea* and *The Mycophile*, to electronic format, available on our website. We've also dabbled with social networking through a page on Facebook.

As the original proposals percolated, it became clear that to build membership, NAMA needs to develop better communication with our affiliated clubs and members. We are not reaching the vast majority of amateur mycologists in North America. To help fill that gap, a glossy new brochure (created by Patrice Benson) touting the benefits of NAMA membership was printed and distributed to Regional Trustees. This is a beginning, but more work, especially in the area of publicity, lies ahead.

Consistent communication with members is key to NAMA's success. The next task of the Marketing Committee will be to look at all the ways mushroomers might hear about NAMA's mission and benefits. We have just sent a sample web page, PDF of the new brochure, and a list of new developments to all affiliated clubs and Regional Trustees.

NAMA's Areas of Expertise

NAMA has served as an umbrella organization and melting pot for amateur and professional mycologists for more than a half century. Our expertise in toxicology, photography, and education is well known. Thanks to Dr. Michael Beug, we have taken the lead in developing program content for use by affiliated clubs. Dr. Beug has also brought NAMA to the forefront of mushroom toxicity knowledge through NAMA's Poison Case Registry and an annual summary report of mushroom poisonings. Sandy Sheine has developed curricula for mushroom education for K-12 school science programs. Mushroom cultivation, a popular topic of mushroomers everywhere, is well documented on the NAMA website thanks to Ron Spinosa. Ron also moderates an online mushroom cultivation discussion group for NAMA with over 600 participants.

Developing a New Mission

To reach more of our "target audience" and increase membership, we must strive to become relevant to the average mushroom enthusiast. One way to accomplish this is through a focus on field mycology. Dr. Tom Bruns, in his role as president of the Mycological Society of America (MSA), proposed creation of a *North American Mycobiota for Macrofungi*. (Starts on page 1 of *Inoculum* at <http://msafungi.org/wp-content/uploads/Inoculum/62%284%29.pdf> Note: an article on this topic will appear in the next *McIlvainea*). We believe this project, which is still in its infancy, will bring new energy to NAMA. It will

stimulate funding for academic study, and renew interest in field mycology. A new partnership between the MSA and NAMA will help amateurs learn, help professionals return to their field skills, and immerse young PhD students and post-docs in taxonomy. We predict this work will bring a new generation of mycologists to NAMA.

Moving Forward

NAMA stands at a crossroads. Can it evolve beyond being an organization that puts on an annual foray? This issue is outside the scope of the Marketing Committee. Without a plan for change, little progress is made year over year. We need to explore whether the present governing structure of NAMA is appropriate for the times. Perhaps a focus group could be charged to design a better structure and bring a proposal to the next trustee meeting.

More on NAMA's future in the next *Mycophile*...

David Rust

The Marketing Committee would like to hear your ideas. If you have comments, please contact me at incredulis@yahoo.com.

NAMA EDUCATION TEACHING KITS

Are you considering teaching about mushrooms to K-12 classes, community college or adult level classes, at a nature center or science museum? We have just replaced the description of the NAMA Mushroom Teaching Kits on the NAMA website, <http://www.namyco.org/education/trunk.html> to include new content and to offer an individually tailored set of materials just for your needs. When you read the descriptions of the contents of the Eastern Mushroom Teaching Kit and the Western Mushroom teaching Kit you will be amazed at the materials included. We offer books, lesson plans, DVDs, videos, printable handouts for students and teachers, dried mushrooms, mushroom dyed wool samples and much more. The contents are continually updated. Additionally, you will be able to choose the right materials for your students in consultation with Carol Dreiling, caroldrei@aol.com, for the Eastern Kit (east of the Mississippi) and with Maggie Rogers, rogersmm@aol.com, for the Western Kit (west of the Mississippi). The Kits may be rented for a period of two weeks to a month, depending on your needs. Perhaps your mushroom club would like to offer to sponsor the rental of the Kit to a teacher or naturalist in your area. Please remember that we only have one of each Kit so you must plan to rent it well in advance of your proposed dates.

We have developed these Kits over a period of twelve years. Many thanks go to Carol Dreiling and to Maggie Rogers for handling the orders, keeping the contents intact and revising the contents, over a period of many years.

Sandy Sheine

NAMA Education Committee

NAMA 2011 PHOTO CONTEST WINNERS in Pictorial Category



Phallus indusiatus by Christian Schwarz,
First Place



Armillaria mellea, by Charles Fonaas, Third Place

This division is for single photos that illustrate the beauty and variety of fungi in form and color. The objective is a photo suitable for display or illustration in a fine book. Judging criteria include consideration of both technical (focus, depth of field, exposure, lighting, color, absence of distracting elements) and artistic (composition, color, background, lighting) aspects.



Lactarius substriatus by Erin Page Blanchard,
Second Place

In the next issue of the Mycophile we will show you the photos that received Honorable Mention in the pictorial category.

CULINARY CORNER: THE WORLD IS MY OYSTER by Joe and Kathy

Brandt (Edited and Reprinted from Mushroom the Journal, Fall 2009 – Winter 2010).

Oscar Wilde once said "The world is my oyster". Oysters (*Pleurotus ostreatus*) are without a doubt one of the best and most versatile mushrooms in the world. The flavor appeals to a wide variety of palates; the texture, when found in good condition and properly cooked, is well suited to a great range of dishes, and in many areas, they may be found with enough frequency that a ready supply of them is generally not a problem.

As many of you are probably well aware, there is often a dramatic difference between the condition of wild oysters found during warm weather, and those found from early fall to early or even mid-winter. The bugs love oysters too— and when it's warm, the chances of finding insect-free oysters is remote. Once the weather has become a bit colder, the probability of insect infestation reverses, and a great majority of the oysters you are liable to come across will likely be in pristine condition, provided they have been located within a week or so after they have emerged. The colder the weather, the less chance there will be of insect infestation of any kind, and the taste of winter oysters is stronger and more intense in comparison to the blander summer oysters.

Although oysters hold up fairly well if refrigerated, we always recommend that they be processed as soon as possible, because left unattended for a day or so, the grubs will spread like wildfire, refrigerated or not. Oysters, like most mushrooms, will suck up water like a sponge, so it's important to try not to immerse them in water while cleaning. Use water only as necessary, and avoid exposing the gills to water for any length of time, as these will absorb liquid faster than the "cap" side. If it's necessary to use water on both sides, we advise employing a gentle "squeezing" technique to drain off excess water prior to slicing, otherwise, you're going to wind up with so much liquid in your pan once you start cooking them that they might as well be boiled. As with most other mushrooms, a damp cloth is the best way to clean them if possible. A soft brush is always useful, and a knife point may be employed for dislodging stubborn or embedded debris. As a rule of thumb, only the caps will be soft enough for cooking; the stems and central "body" stalk, if any, are normally too tough to use, and these areas will also be more likely to harbor insects than the caps themselves. Prior to cooking, we recommend that caps be sliced crosswise, and always observe the exposed cut surfaces carefully, as tiny grub tunnels will rarely be apparent from the outside surface of the caps.

Once cooked, Oyster mushrooms may be successfully frozen without difficulty, and will keep for quite a long period of time (a year, is no problem) before they noticeably begin to lose flavor. It is always recommended that as much air as possible be removed from the container prior to freezing. Oysters may also be dehydrated for storage, which frees up space in your freezer and dehydrated mushrooms will keep almost indefinitely if properly stored, but we find that the best method of preserving the flavor and texture is freezing, if circumstances permit.

BASIC OYSTERS

3 Tbsp. olive oil
4 cloves minced garlic
2 onions, chopped
1½ tsp. salt
1½ tsp. ground cumin
¼ tsp. fresh ground pepper
10 cups sliced oyster mushrooms
Tamari/soy sauce (optional)

Heat oil in a large sauté pan, medium heat. Add garlic, stir once. Add onions, cook 5 minutes. Add half of the salt and cumin, then add the mushrooms and mix well. Continue to cook for 20-25 minutes (stir every few minutes to prevent sticking), adding remaining salt and cumin gradually. Here's the thing: you can be conservative with the initial application of salt and cumin, since you can always add more (and you'll probably want to, trust us) to taste. If in doubt, add more salt & cumin. Add pepper about halfway through cooking. Tamari may be added to taste at almost any time. Add 2 tsp. of water if dry. They



should be slightly browned when done. They may be eaten as is, on pasta or rice, in a wrap with other ingredients, or used in recipes that do not require a great deal of additional cooking time. Once cooked, they will keep just fine in the fridge (tightly covered) for several days, or they may be frozen for use at another time.

If you've had the good fortune to find a very large quantity of oyster mushrooms, you can double (or triple) this recipe and bake them. Put all the dry seasonings together, and place the oysters into a very large bowl. Drizzle on the olive oil while tossing until evenly coated. (You may be able to use a bit less oil than the recipe calls for) add in the garlic & onions, toss to mix. In stages, sprinkle on the dry ingredients, and toss to coat evenly. Transfer to a large baking pan (use an extra pan if needed), cover with foil, and put into a 350° oven for 30 minutes. Remove foil and stir. Replace foil, return to oven for 30 minutes. Remove foil and stir. Return uncovered to oven for another 30 minutes for a total of 90 minutes cooking time.

OYSTER STEW

4 tbs. unsalted butter
¼ cup finely chopped onions
½ cup finely chopped celery
2 tbs. finely chopped shallots
1 tsp. minced garlic
½ pound assorted mushrooms (wild, store, combo), cleaned & chopped
½ tsp. fresh thyme leaves, chopped
½ cup dry white wine or sherry
2 cups half & half
1 pound oyster mushrooms, sliced & cooked in 2 Tbsp. olive oil and ½ tsp. ground cumin.
Drain off & reserve liquid.
2 tsp. fresh lemon juice
Fresh ground white pepper
2 tbs. chopped parsley
Garnish with finely chopped chives
Thin sliced garlic toast

In a large saucepan, melt butter (medium-high heat), add onions, celery & shallots. Cook, stirring, until soft, 3 minutes. Add garlic, cook (stirring) 30 seconds. Add the assorted mushrooms and thyme. Cook until mushrooms give up their liquid, 4-5 minutes. Add wine (or sherry), bring to simmer, stirring until liquid is reduced by half. Add half & half, and the reserved oyster liquid, cook until slightly thickened. Add lemon juice and the oyster mushrooms. Cook until oysters start to curl, 2-3 minutes. Stir in parsley, adjust seasonings to taste. Ladle into bowls, garnish with chives and garlic toast. Serve hot.

Hot and Sour Soup

By Phil Tedeschi

2 cups dried shiitake (Chinese black mushrooms, *Lentinus edodes*)
1 cup dried tree ear or wood ear mushrooms (I use a combination of *Tremella foliaceae* and *Auricularia aricularia-judae* which are available at Chinese groceries) (fresh mushrooms work if you have them)
1 can (15 1/2 oz.) Golden mushrooms (enoki) (available at Chinese groceries, cut in half to fit on a soup spoon)
1 dozen dried tiger lily stems (available at Chinese groceries, cut in half to fit on a soup spoon)
1 can (8 oz.) julienned bamboo shoots
1 can (15 1/2 oz.) baby corn cut to bite size pieces
1 can (8 oz.) water chestnuts
1/2 lb. bean sprouts (remove stringy roots)
3 tbs. canola oil
1 cup julienned pork
3 tbs. soy sauce
1 can (48 oz.) chicken broth

5-6 tbs. red wine vinegar (to taste, this is the sour) 24 oz. water
White bean curd cut into thin strips (optional)
4 eggs lightly beaten
1 tbs. freshly ground black pepper (this is the hot)
1 bunch scallions
'Better than Bouillon' chicken and/or mushroom bouillon (optional)

Soak the dried mushrooms and tiger lily stems in hot water and let stand for 15 to 30 minutes until tender then drain. Reserve mushroom-soaking water.

Cut off and discard the Shiitake stems and harder parts of the wood ears. Julienne the mushrooms. Cut the tiger lily buds in two.

Heat stock pot and add canola oil. Sauté the julienned pork and add the soy sauce. Add the mushrooms, wood ears and the tiger lily buds and sauté for a minute or two. Add the chicken broth, the reserved soaking liquid and the water. (You can use 'Better Than Bouillon' chicken bouillon and mushroom bouillon to add flavor). Simmer for 15 to 20 minutes.

Add the bean curd, and if using the canned vegetables, bring to a boil and turn off the heat for about a minute. Add the eggs pouring in a thin stream while whisking the soup.

Sprinkle with the chopped scallions and serve.

I don't always use all of the canned ingredients. Various combinations of the canned vegetables work. I sometimes forget the eggs.

The recipe makes about 1 gallon of soup.

First published in SPORES ILLUSTRATED, newsletter of the Michigan Mushroom Hunters, Dec. 2011.

Jay Justice and Debbie Viess in the 2011 NAMA foray mushroom identification area



Photo by David Rust



Instructors for the cultivation class, Jim Tunney, Rebecca Miller and Mark Spear in their "spawn" teeshirts

Photo by David Rust

“Hotlips” on the Beech

By Andrew Wilson



Figure 1: *Calostoma sarasinii* from the highlands of Malaysia. This species is found to form ectomycorrhizas with *Castinopsis* (Fagaceae). (Photo courtesy Dennis Desjardin)

If you're reading this, and live on the west coast of the United States, you are probably not familiar with the enigmatic puffball genus *Calostoma* and why it comes by the deserved nickname “hotlips”. This is because it only occurs on the east coast. Why? Well this is a question I have been interested in for a while. This article will share some of what I've learned, but a proper introduction is necessary before we go any further.

The name, *Calostoma*, is Greek for ‘pretty mouth’. One look at this fungus and you will understand why (Figure 1). The spores from this puffball are released through an opening at its apex, which is a feature found in many other puffballs (i.e. earthstars or *Geastrum* and stalked puffballs or *Tulostoma*). However, these openings are more like pores while in *Calostoma* this opening is “star-shaped” and is more appropriately called a peristome, because their openings are rimmed by a raised ridge (“lips”). What sets off *Calostoma* from other puffballs is that its peristome is normally colored bright red or orange. Because of this, the nickname “hotlips” is clearly appropriate and its striking appearance is hard to forget.

If you have been fortunate enough to observe *Calostoma* in nature, you might have experienced a mixture of fascination and repulsion. In the case of *C. cinnabarinum*, the fruiting body is regularly encased in a thick jelly that the fungus sheds when it is ready to release its spores. In addition, the fruiting bodies are composed of this rubbery, gelatinous tissue that is reminiscent of surgical tubing. The structure of *Calostoma* fruit bodies is unlike that of other puffballs. If you were to make a downward slice from the “lips” through the center of the puffball, you would see that the spores mature inside a papery sack that is attached to the underside of the peristome (See *C. lutescens* in Figure 2). How this structure functions has not been studied or fully described. However, from personal observation of young and old specimens, it appears that when the spores mature this sack gradually shrinks, forcing the powdery spores out through the peristome. In essence, *Calostoma* is a bizarre fungus, even for a puffball, which only adds to my curiosity about its evolutionary history.

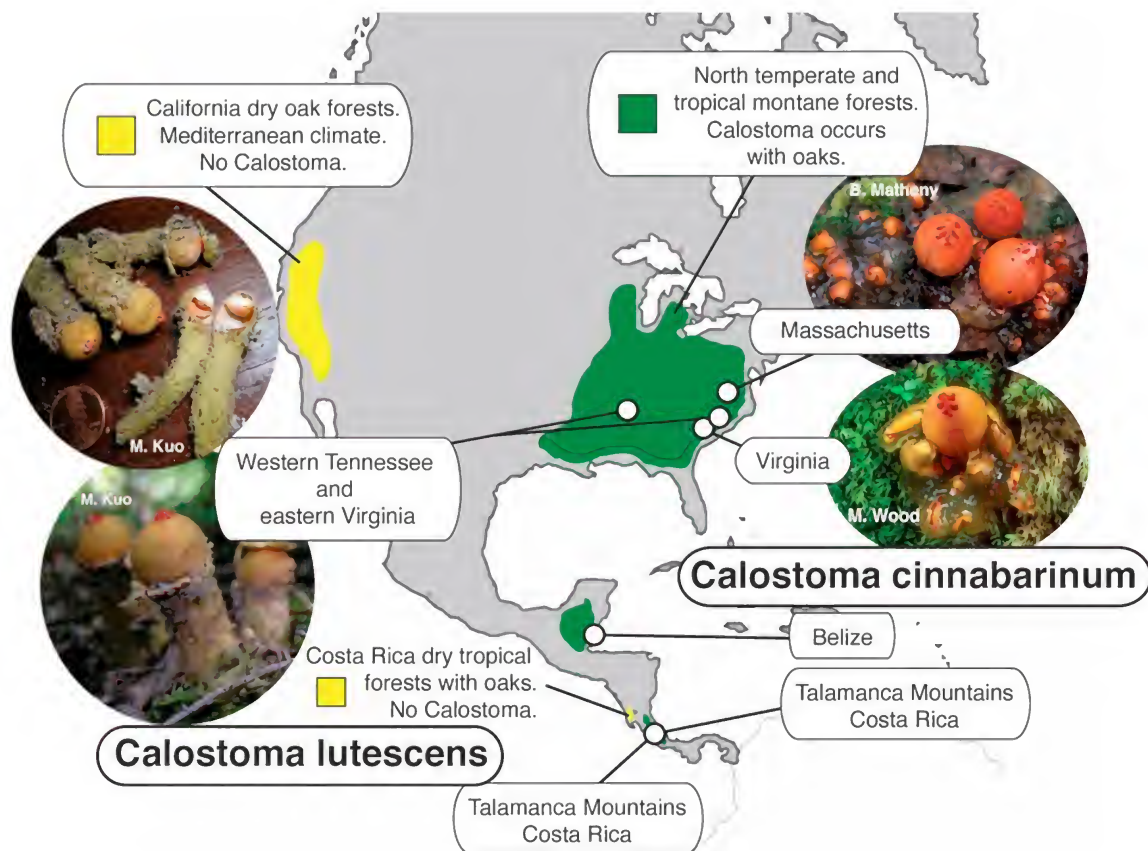


Figure 2: *Calostoma* distribution, North and Central America (Photos, top to bottom, left to right: Michael Kuo, Michael Kuo, Brandon Metheny, Michael Wood)

As a mycologist, I find it interesting that *Calostoma* grows on the east coast but not the west. This begs the question of why its distribution is limited in North America in such a way (Figure 2). Over the past several years I have been developing a hypothesis about the biogeography and evolution of this genus that originated after first exploring *Calostoma*'s ectomycorrhizal associations. Part of my early dissertation sought to describe the ecological role of *Calostoma cinnabarinum* in Massachusetts. In this study I discovered that this species is ectomycorrhizal with *Quercus* (oaks).¹ In broadening this study to Asian species, I found *C. sarasinii* ectomycorrhizae on the root tips of *Castinopsis* in Malaysia (Figure 1). Both *Quercus* and *Castinopsis* are members of the beech family, the Fagaceae. This coincidence sparked my curiosity. After further research into *Calostoma* and the Fagaceae I began to see a pattern that might explain *Calostoma*'s biogeographic history.

My hypothesis suggests that the genus *Calostoma* originated in Southeast Asia where, as an ectomycorrhizal fungus, it began with members of the Fagaceae. This association began millions of years ago, and resulted a long-term and exclusive (for *Calostoma*) love affair (so to speak). The presumed Southeast Asian origin for *Calostoma* is suggested through some unpublished research and the observation that this happens to be the center of diversity for the genus. Southeast Asia also happens to be where the Fagaceae originated as described in a study by Manos and Stanford.² According to this study, members of the Fagaceae, such as oaks and beech (*Fagus*), dispersed from their tropical Southeast Asian origins through Asia, across the Bering land bridge connecting Siberia and Alaska, and into North America. In the Northern Hemisphere, the only demonstrated ectomycorrhizal associations for *Calostoma* are with the Fagaceae. If my hypothesis is correct, then *Calostoma*'s ectomycorrhizal association with the Fagaceae is exclusive and this relationship is what is responsible for *Calostoma*'s existence in The New World.

As for *Calostoma*'s New World distribution, why is it only found in eastern North America? Further study needs to be done, but here is what is known so far. *Calostoma cinnabarinum* is observed as far north as Massachusetts and south to the Great Smokey Mountains, and about as far west as Tennessee (perhaps farther), all in mixed forests which are known to host oaks. However, its range is not limited to North America as it is also found in the Central America country of Belize (under oak) and as far south as the montane oak forests of Costa Rica. Another New World species, *C. lutescens*, shares a similar distribution. The fact that the distribution of *Calostoma* does not perfectly match that of oaks is something I find really curious. In the lowland dry tropical forests of Costa Rica, there are oaks, but so far there have been no collections of *Calostoma* (Figure 2). Having grown up in California and studied the fungal communities there, I can confidently say that *Calostoma* does not associate with California oaks.

So what is up? A student of mine is currently describing the ectomycorrhizal communities associated with the oaks in the Costa Rican dry forests using DNA sequence analysis. I am curious to learn whether any *Calostoma* is found growing on these root tips. However, similar studies of oak woodlands in California did not identify any *Calostoma* ectomycorrhizae^{3, 4} so there is reason to suggest that the oaks in these dry Costa Rican forests do not have *Calostoma*. If not, then perhaps habitat type (dry vs. wet), or soil mineral content, could also be important factors limiting *Calostoma*'s distribution in eastern North and Central America.

Ultimately, further evidence demonstrating the influence of habitat type and ectomycorrhizal associations of *Calostoma* needs to be gathered. As of yet, it appears that species of *Calostoma* do not share the same promiscuous ability as its cousins *Pisolithus* and *Scleroderma* in forming ectomycorrhizal associations with many plant hosts. Evidence demonstrating that *Calostoma* grows on pine or some host outside of the Fagaceae will force me to revise my hypothesis. Until then, the evidence corroborating the shared histories between the Fagaceae and *Calostoma* I believe makes for a fairly compelling story.

About the Author:

Andrew Wilson is a postdoctoral research associate at the Chicago Botanic Garden where he is studying the systematics and population ecology of the mushroom genus *Laccaria*. He was first introduced to mycology by Dr. Dennis Desjardin at San Francisco State University as an undergraduate.

He soon committed to becoming one of Dr. Desjardin's Masters students to study the mushrooms of Indonesia. For his Ph.D. Andrew studied under Dr. David Hobbie at Clark University in Worcester, Massachusetts. It was there where Andrew began his studies on the ecology, systematics and evolution of genus *Calostoma* and the suborder Sclerodermatineae. Since then, he has made several collecting trips to Malaysia and one most recently to Tibet for his postdoctoral research. He is now collaborating with his postdoctoral advisor, Dr. Greg Mueller, on a proposal that will use new sequencing technology to study the population genetics of mushroom-forming fungi.

1. Wilson, A.W., E.A. Hobbie, and D.S. Hobbie. (2007). The ectomycorrhizal status of *Calostoma cinnabarinum* determined using isotopic, molecular, and morphological methods. *Canadian Journal of Botany*. 85: p. 385-393.
2. Manos, P.S. and A.M. Stanford. (2001). The Historical Biogeography of Fagaceae: Tracking the Tertiary History of Temperate and Subtropical Forests of the Northern Hemisphere. *International Journal of Plant Sciences*. 162(s6): p. S77-S93.
3. Morris, M.H., et al. (2008). Contrasting ectomycorrhizal fungal communities on the roots of co-occurring oaks (*Quercus* spp.) in a California woodland. *New Phytologist*. 178(1): p. 167-176.
4. Smith, M.E., G.W. Douhan, and D.M. Rizzo. (2007). Ectomycorrhizal community structure in a xeric *Quercus* woodland based on rDNA sequence analysis of sporocarps and pooled roots. *New Phytologist*. 174(4): p. 847-863.

This updated article first appeared in the January issue of *Mycena News*, the newsletter of the Mycological Society of San Francisco.

Editor: I encourage mycologists and clubs to send your articles, recipes, puzzles, etc. for inclusion in *The Mycophile* to diannasmith@optonline.net. Guidelines for submitting manuscripts to Dr. Michael Beug for *McIlvainea* can be found at http://namyco.org/publications/mcilmvainea/mcil_instructions.html.

Book Reviews

Mushrooms of the Boreal Forest

Eugene F. Bossenmaier, 1997

University Extension Press, University of Saskatchewan

#452–221 Cumberland Avenue North, Saskatoon, SK S7N 1M3

306.966.5565 / <http://ccde.usask.ca/uep>

ISBN 0-88880-355-9

\$24.95 Canadian (soft cover, xiv + 105 pp.) — Sale price \$5.00 (as of December 2011)

This is not a new book but, given its availability at a greatly reduced price, one that seemed worth moving to the head of the review queue. Although not a mycologist, Eugene Bossenmaier is a Canadian wildlife biologist and has spent considerable time in the woods where he couldn't help but notice the fungi. *Boreal* means northern and the boreal forest stretches across Canada, Alaska, Russia, and northernmost Europe. It is heavily dominated by ectomycorrhizal trees, including spruce, pine, larch, fir, birch, and aspen/cottonwood and so, not surprisingly, mushrooms can be exceedingly abundant there. This relatively short treatment presents brief looks at 220 species of characteristic boreal forest mushrooms, plus 3 slime molds.



The introductory matter occupies a mere eight pages and, following the Preface, includes brief discussions of the book itself; the boreal forest; how to use the book; biology, ecology, and anatomy of mushrooms; and appreciating forests through their mushrooms. The mushroom (and slime mold) descriptions follow and the book concludes with a brief section on mushroom edibility, glossary, and index.

The descriptions are organized by morphotype using the usual groups — gilled fungi (about two-thirds of the book's species), ridged fungi (chanterelles), fleshy pored fungi (boletes), toothed fungi, coral and club fungi, woody pored fungi (polypores), puffballs and earthstars, morels, false morels and elfin saddles, cup fungi, jelly fungi, and "other" fungi. The descriptions are presented up to eight per page. They are very brief and are not adequate for confident identification. Thus, this book is best suited for use with more comprehensive guides and the latter should be consulted carefully before accepting a tentative identification — especially if you intend to consume your find. Each description is supported by a color photograph (sometimes two) on the facing page. The photos are generally of good to very good quality, but the small size of reproduction (mostly 5 × 7 cm) makes it difficult to see essential details in

many cases. Because of the small size, many of the images were cropped very tightly so as to show the mushrooms at as large a size as possible. Unfortunately, this removes most of the mushrooms' surroundings, making it very difficult to judge the size of the fruitbodies (and the descriptions give no indication of size). References to descriptions and images of the species in five field guides — *Mushrooms Demystified* (Arora), *Edible and Poisonous Mushrooms of Canada* (Groves), *The Audubon Society Field Guide to North American Mushrooms* (Lincoff), *A Field Guide to Mushrooms — North America* (McKnight & McKnight), and *Mushrooms of Western Canada* (Schalkwijk-Barendsen) — are given to facilitate cross-checking. Some of the mushrooms are identified to genus only, there are a couple mis-identifications and a few others that I question, and, as would be expected in a 15-year-old book, some of the names are no longer in favor.

Scattered throughout the descriptions section are many sidebars that present interesting information about fungal folklore, names, ecology, and so forth.

The brief section on edibility provides general advice for pursuing mycophagy safely and then highlights five "easily identified, non-poisonous" species — *Morchella elata*, *Pleurotus ostreatus* (actually *P. populinus*), *Leccinum insigne*, *Hericiium ramosum* (now *H. coralloides*), and *Dentinum* (now *Hydnum repandum*). For each of these, key identification features and simple cooking suggestions are given. However, inclusion of *L. insigne* here was not a good idea. There have been many reports of poisonings by reddish-capped leccinums in the U.S. Rockies, the Cascade Range, and in Alaska and, until it has been determined what species (singular or plural) has/have been responsible, caution should be advised when it comes to eating leccinums.

In summary, this is a good little book, just don't over-rely on it. If you live in, or will be visiting, northern North America, it would make a useful companion for your other field guides. And if the sale price is still in effect when you read this, it would make an excellent buy.

Steve Trudell

A Field Guide to Edible Mushrooms of the Pacific Northwest

Daniel Winkler, 2011

Harbour Publishing

<http://www.harbourpublishing.com> ISBN 978-1-55017-542-4 \$7.95 (Available from the author at www.MushRoaming.com) Daniel Winkler is probably best known for leading mushroom and plant trips to Tibet, where he has become an expert on the caterpillar fungus (*Ophiocordyceps sinensis*, yartsa gunbu, "summer grass, winter worm") and its role in the culture and economy of many rural communities. His new closer-to-home publication is perhaps best described as a laminated, accordion-folded, small poster. When folded, it is about 9 inches high and half as wide. Unfolded, it extends to about 36 inches, still 9 inches high.

Two panels provide a brief introduction to mushrooms, their identification, edibility, habitat, and seasonal occurrence, plus a key to the symbols or icons used in the species descriptions. Wisely, users are cautioned not to rely on this publication alone for identifying mushrooms, especially ones intended for the table. Descriptions are presented four or five per panel.

The descriptions are very brief and each is accompanied by a color photo (or sometimes two). The photos are rather small (mostly about 6 × 4.5 cm) and most include very little of the mushrooms' surroundings, making it hard to get a good sense of scale. Most of the images are of good to very good quality, although some fail to show essential ID features, such as the sac-like volva of *Amanita phalloides*, the volvas of *A. muscaria* and *A. smithiana* (not "*A. smithii*"), and the ocher-yellow gills of



Russula xerampelina. By my count, 51 species are presented — 38 good or choice edibles, 4 edible with caution, and 9 poisonous. These are indicated by a system of icons — a green circle with green fork and knife for good edible, the same with an added gold star for choice edible, a golden yellow “warning” triangle with fork and knife for edible with caution, and a red circle with international “no” slash for poisonous. Each icon is then bordered in green, yellow, or gray to indicate the species’s ease of identification — easy, moderate, or only with great care. A clever idea, but the small size of the icons makes it a bit difficult to see the borders clearly.

If you’re interested in an overview of the principal edible fungi of this mushroom-rich part of North America, this provides the key information in a convenient, affordable format.

Steve Trudell



Poisoning by *Amanita phalloides*, *Amanita bisporigera* and other species with α -Amanitin

Reflections on 2011 by Michael W. Beug, Chair NAMA Toxicology Committee
beugm@evergreen.edu

Late in the summer of 2011 the aftermath of hurricane then tropical storm Irene resulted in a massive mushroom crop in the eastern United States and a corresponding spike in cases of mushroom poisoning. In the next few months I will be going through the deep stack of poisoning reports already on my desk and also gathering in reports from NAMA’s network of well over 150 toxicology identifiers spread throughout North America and will be preparing reports both for **The Mycophile** and for **Mcllvainea**. The amazing thing is that for 2011 there were no deaths from mushroom poisoning that I have heard about so far and also no reports of cases where a liver transplant was conducted as a result of ingestion of a mushroom containing amatoxins. Yet there were several ingestions of potentially deadly poisonous amatoxin-containing mushrooms. Was this merely good luck or was this the result of a new experimental approach to treating these cases using IV-silibinin? Many are crediting the IV-silibinin. Another possibility is that we are seeing the net effect of the several changes in treatment protocol associated this experimental drug.



Amanita bisporigera

Photo by Dr. Michael Beug with

Usually, because of patient privacy laws and/or lack of involvement of a person knowledgeable about mushroom identification, the information about a mushroom ingestion is far too sketchy for any conclusions what-so-ever. We often have no idea of how many mushrooms were ingested, how many of the ingested mushrooms were toxic species, or how severe the symptoms were at the start of treatment. However, this year we have one case where a great deal of detail is available thanks to the efforts of Raymond LaSala, President of the Mycological Association of Washington, an amateur

mycologist with over 30 years of experience and the cooperation of Marco Paez, a fourth year medical student at Georgetown University Hospital. The attending physician was Dr. Jacqueline Laurin. Using information from Marco Paez, Mr LaSala provided the following report:

"The patient was a 49 year-old male with no history of liver disease who was transferred to Georgetown University Hospital from an outside hospital on 9/15/11 for possible liver transplantation and evaluation. On 9/12/11 the patient noticed after the rainy weekend new multiple mushrooms from his backyard in northern Virginia that were not present there before. He picked out approximately 15 mushrooms, enough to carry in both hands. He reported that there were multiple colored mushrooms, but most of them were white. That same morning he made a stir-fry mushroom broth. Two hours after consuming the mushrooms, he developed profuse watery non-bloody diarrhea. He had approximately 20 bowel movements that day. The next morning he continued to have diarrhea, and nausea. He had one episode of self-induced emesis where he noticed many mushrooms were still intact in the vomit. He continued to have diarrhea throughout the day and was not consuming any food. On Wednesday he began to feel fatigued and lightheaded. He went to an outside hospital, where they checked basic labs. His liver enzymes were elevated (ALT 8000/ AST 750, normal is less than 30), and he was found to be in renal failure. The outside hospital started him on N-acetylcysteine and contacted the Transplant Hepatology team at Georgetown University Hospital. Overnight the patient was transferred to Georgetown. The team there contacted the National Capital Poison Center and consulted with an expert physician on *Amanita phalloides* toxicity to help them with his treatment. They gave him aggressive fluid resuscitation, started him on IV Silybinin, and kept him without eating. They also performed an Endoscopic retrograde cholangiopancreatography and placed a nasal biliary drain to prevent the toxin from recirculating into the hepato-biliary system... his liver enzyme and renal function steadily improved, and he was discharged on 9/19/2011 (ALT638, AST62)."

When Raymond LaSala first contacted me immediately after the patient was treated and released, he had only seen poor quality pictures of the suspect mushrooms and so was quite unsure of whether or not the patient had actually consumed a deadly *Amanita* species. Indeed, he speculated that since the recovery was so rapid, it was probably a *Tricholoma* or an *Inocybe* that was the culprit. Both Gary Lincoff and I examined the images but the only conclusion we were able to arrive at was that an *Inocybe* was not involved. However, later Raymond LaSala was able to examine the actual suspect mushrooms which were still in good condition. The species involved were *Suillus granulatus*, *Amanita rubescens*, and *Amanita bisporigera*. We do not know how much of the *Amanita bisporigera* was consumed but the fact that the patient was in renal failure could indicate a significant amount of toxin had been ingested and that this was a significant poisoning event, justifying experimental use of IV-silybinin, known in Europe as Legalon-Sil. Shortly after this case, a retired farmer from Frederick and then two women were admitted to Georgetown and each in turn treated with IV-silybinin by the same attending physician, Dr. Jacquelin Laurin, a liver specialist. I have no details on these other cases other than news reports that the outcome in all four cases was successful.

According to numerous news reports in late September of 2011, Dr. Laurin applied for approval from the hospital's Institutional Review Board and was initially granted one-time emergency use and was later granted approval to use the drug for a month. She had read a research paper detailing the effectiveness of the drug which is approved for use in Europe. According to the news reports, her experience in these four cases has left her hoping that the FDA will approve silybinin soon.

I share in the desire to see this drug approved for use soon so long as the entire protocol advocated by Dr. Todd Mitchell of Santa Cruz is followed. It was Dr. Mitchell who first used IV-silybinin in North America and who got approval for the current research protocol. We have talked numerous times

since that first case and both of us have talked at length with Dr. Denis Benjamin, author of Mushrooms Poisons and Panaceas. Ever the skeptic, Dr. Benjamin is not convinced by the data so far. There have been too few cases and survival is better than 90% with good medical care without use of IV-silibinin. It is clear that penicillin is ineffective. It is also clear that N-acetyl-cysteine is ineffective. It is clear that the entire currently accepted treatment protocol for amatoxin cases needs revision. While the case for IV silibinin is not yet solid, when I asked Dr. Benjamin what he would do were he himself poisoned, he indicated he would ask the attending physicians to follow the protocol of Dr. Mitchell that involves rehydration (the most important single step), drainage of the bile (if called for by the severity of the symptoms), and use of IV-silibinin.

Important factors in deciding when measures beyond rehydration are called for in addition to the typically elevated liver enzymes are kidney failure and decreased blood clotting factors (which could cause a patient to “bleed out”).

Regarding the case described here, Dr. Benjamin pointed out that “the enzyme level of 8,000 is rather unimpressive considering that it should have been at the peak at day three or four – 80,000 would have been a little more dramatic. We have no data about coagulation factors, bilirubin, etc. The extent of the renal failure is also unknown and may have been the result of nothing more than dehydration from all of the diarrhea (pre-renal azotemia) and have nothing to do with the amatoxin.” Denis Benjamin is still waiting for a series of carefully documented cases treated in a standard manner according to the protocol to be published in a high quality medical journal.



Amanita phalloides

Photo by Kit Scates Barnhart

Silibinin is extracted from milk thistle and is available as a herbal supplement in the U.S. We do have enough data to know that taking silibinin orally is totally ineffective – the material is not absorbed. Thus readers should not conclude that they can protect themselves by taking this supplement. Silibinin can reach the liver in potentially pharmaceutically effective concentrations only when injected and that requires a highly purified form.

Consumption of deadly species of *Amanita* is often stated to be the result of immigrants coming to a new area and encountering deadly mushrooms in their new home that were not present in their native land. I have been guilty in the past of spreading this idea by thinking that, for example, East Asian immigrants are mistaking these mushrooms for the paddy straw mushroom that they were picking in the wild and consuming safely in their native land. As I was composing this brief article, I got word on 1/2/2012 of four people of Chinese ancestry in critical condition in a hospital in Australia after eating *Amanita phalloides* for a New Year's Eve dinner (one reportedly recovered enough to be released by/ 2/2012, two died within four days after consuming the mushrooms, and one remains in critical condition). They thought they had found paddy straw mushrooms. However, the paddy straw mushrooms people are consuming in Asia are cultivated mushrooms and as I have learned more about the distribution of deadly *Amanita* species, I have discovered that deadly Amanitas are present in Europe, Asia, Mexico, etc. and that poisoning by wild mushrooms is a global problem. The Australian articles all contained the now seemingly standard warning that you should only eat mushrooms purchased in the store. The same sort of articles warning against eating all wild mushrooms appear in the Chinese press, the Nepalese press, the Russian press, etc. A major problem facing many immigrants is poverty and in attempting to supplement their often meager food supplies they resort to foraging, even though they had never picked wild mushrooms in their homeland. It is ignorance of mushroom taxonomy that is the problem, not dislocation. The immigrants often face a language barrier that makes

access to good taxonomic information difficult to impossible. A second problem is people thinking that natural foods are all safe. Just because it is organic and natural does not mean that it is safe to eat.

RESOURCES for “WHAT’S IN A NAME”

At the 2011 NAMA Foray last summer, held in Clarion, PA. August 4-7, Dr. Roz Lowen presented a lecture entitled “What’s in a Name?” Dr. Lowen clearly discussed the process that a mycologist uses to describe new generic and specific names for fungi. Some of the attendees asked for references they could use that translate the Latin and Greek words that are often used in the names. I offered to prepare a list of books that would be helpful. Some of the books that I am recommending in the following list are old and out of print, and some are new and are available for purchase, either new or used.

A Mycological English- Latin Glossary, Mycologia Memoir No.1, published for the New York Botanical Garden and the Mycological Society of America, Edith K. Cash, Hafner Publishing Company, New York and London, 1965. A 152-page glossary of English-Latin words is presented, and also includes Latin words based on Greek roots. Some common Greek prefixes and suffixes are also listed.

Ainsworth & Bisby’s Dictionary of the Fungi, 1st through 10th editions, 1943-2010, P.M. Kirk, J.C. David, and J.A. Stalpers (eds.), CABI, Wallingford, UK. This is the standard work used by all mycologists and is a dictionary, which references the accumulated knowledge on mycology. All organisms traditionally studied by mycologists are covered, including lichens, fungi, slime molds, water molds and yeasts.

Illustrated Dictionary of Mycology, Miguel Ulloa and Richard T. Hanlin, American Phytopathological Society, St. Paul, MN, 2000. To have both the definitions and the illustrations together in one book is exceptional and is my favorite mycological dictionary.

Dictionary of Word Roots and Combining Forms, Donald J. Borror, Mayfield Publishing Company, Mountain View, CA, 1988. It is compiled from the Greek, Latin and other languages, with special reference to biological terms and scientific names. This is a small, inexpensive paperback book, which is very helpful in translating word roots and combining forms into English.

How to Identify Mushrooms to Genus III: Microscopic Features, David Largent, David Johnson, Roy Watling, Mad River Press, Eureka, CA, 1977. There is a very good combined glossary, index and examples of microscopic features in this book.

North American Polypores, Vol. 1 and 2, R. L. Gilbertson and L. Ryvarden, Gronlands Grafiske ALS Oslo, Norway, 1987. In Vol. 2, there is a lengthy section entitled “*Derivation of the Accepted Generic and Specific Names for North American Polypores.*”

Botanical Latin, Stearn, William T., 2004, Fourth Edition, Timber Press, Portland, OR. Dr. Roz Lowen writes: “This book is essential as an aid to forming a name for a fungus.”

In addition, Dr. Lowen forwarded to me the following provisional changes to the rules governing the publication of Botanical Nomenclature for naming a fungus:

The new Botanical code is not yet online but here are some major changes made by the Nomenclature Section at the 18th International Botanical Congress in Melbourne, Australia in July 2011. These changes will effect the way scientists create names for new taxa or plants, algae, and fungi

For the first time in history the *Code* will permit electronic-only publication of names of new taxa: no longer will it be required to deposit some paper copies in libraries.

The requirements for a Latin validating diagnosis or description was officially changed, as of Jan. 01, 2012, to allow either English or Latin for these essential components of the publication of a new name.

“One fungus, one name” is an important change for fungi.

As an experiment with "registration of names", new fungal descriptions will require the use of an identifier from "a recognized repository"; the only repository so far recognized is MycoBank (<http://www.mycobank.org/>).

The title of the *Code* was broadened to make explicit that it applies not only to plants, but also to algae and fungi. Now it is called International Code of Nomenclature for algae, fungi and plants (ICN) no longer ICBN.

So while a Latin description is no longer required the names of taxa are still treated as Latin.

Sandy Sheine

NAMA Education Committee

MYCO News

Invisible fungi crucial for rainforest diversity

21 December 2011, by Tamera Jones

A complex network of fungi in the lower canopy could be one reason tropical rainforests are home to so many different types of insects, spiders and centipedes, say scientists.

They found that nearly half of these creatures – called arthropods – are largely dependent on an almost-invisible network of fungi that traps dead leaves that have fallen from the upper canopy. When the researchers removed the fungi, both the numbers and diversity of arthropods dropped dramatically. The findings could help conservationists figure out how to retain some level of arthropod diversity in managed landscapes like oil palm plantations, or logged forest. The fungi branch through the lower canopy extending from the forest floor up to around 30 meters high, catching falling leaves wherever their strands go.

'These fungi are everywhere, and form a messy tangle in the forest understory. You can't really see it until you look for it. You're always looking past it, moving it out of the way as you walk through the forest,' explains Dr Jake Snaddon from the University of Oxford, lead author of the study. This could be why, up until now, its importance was almost entirely overlooked.

Scientists have an idea that the extraordinary numbers and types of arthropods in tropical rainforests is in some way connected to the biological complexity of this habitat. But exactly what contribution these fungal networks make in supporting lots of different types of insects, spiders and millipedes isn't well understood. So together with a team of researchers from the UK and Malaysia, Snaddon decided to find out. They started by analyzing how leaf litter builds up in the canopy.

'Nobody had really looked at the part this system had to play before now,' Snaddon says.

'Initially when I started looking, I could see the leaf litter, but I had to look a lot harder to see the actual fungi.'

The fungus attaches itself to living vegetation, using it as a support network. When dead plant matter falls into the network, the fungus send out tiny filaments known as hyphae to grow into it and break it down. The researchers found that this network of fungi traps more leaf litter than any other known rainforest litter-trapping systems like fern mats or bromeliads. They estimate that the network traps around 260 kilograms of leaf litter per hectare, compared with around 100 kilograms per hectare caught by bromeliads. When they tried removing the network from a small section of Malaysian rainforest, the numbers of arthropods fell by 70 per cent and the variety of species dropped by nearly 60 per cent.

'These fungi play a crucial role in the maintenance of canopy diversity, making a huge contribution to the abundance of insects, spiders and a whole range of arthropods,' says Snaddon.

It seems that these litter-trapping fungi provide both food and a home for a wide variety of rainforest organisms. Not just that, but they probably provide a means of connection for creatures living far apart from each other.

'It acts like a huge network, connecting different parts of the canopy together. It's possible that arthropods use it like a superhighway to get from place to place,' says Snaddon.

'We often focus on the more showy forest species, but this study demonstrates that all species are important,' he adds. The next step will be to figure out if these networks also exist in degraded habitats such as palm oil plantations and logged areas of forest. 'They need consistently damp conditions, which you might not find in degraded areas,' Snaddon says.

The study is published in *Biology Letters*. See <http://planetearth.nerc.ac.uk/news/story.aspx?id=1126>

Jake L. Snaddon, Edgar C. Turner, Tom M. Fayle, Chey V. Khen, Paul Eggleton and William A. Foster, Biodiversity hanging by a thread: the importance of fungal litter-trapping systems in tropical rainforests, *Biology Letters*, published 21 December 2011, doi:10.1098/rsbl.2011.1115

Mushroom of the Issue

Cantharellus californicus

California's endemic Chanterelle is the largest known species of *Cantharellus* in the world. It is very common under Coast Live Oak throughout the fall and winter in central CA, so we are sure to see it at this year's NAMA foray.

Cantharellus californicus is pictured here, courtesy of Noah Siegel.



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Newsletter of the North American Mycological Association

THE MYCOPHILE



Destroying Angels by Linnea Gillman took First Place in NAMA's' 2011 Photo Contest in the category of Judge's Option.

If you are getting this by snail mail and you have a valid email address, please contact Ann Bornstein; 61 Devon Ct; Watsonville CA 95076